SECTION 16480
MOTOR CONTROL EQUIPMENT

PART 1 - GENERAL

1.1 SUBMITTALS

A. Shop drawings:
   1. Motor control equipment:
      a. Outline drawings of assembly.
      b. One line diagrams and wiring diagrams for assembly and components.
      c. Interconnection wiring diagrams.

B. Product data:
   1. Technical data on each type of controller and/or feeder device.

C. Contract closeout information:
   1. Operating and maintenance data.
   2. Government instruction report.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acceptable manufacturers:
   1. Motor control equipment:
      a. Base:
         1) Cutler Hammer/Westinghouse.
         2) Square D.
         3) Siemens Energy & Automation.
         4) Allen-Bradley.
         5) General Electric.
   2. Other manufacturers (not assemblers) desiring approval comply with Document 00440.

B. Motors:
   1. Verify all motor sizes and types of control from approved mechanical shop drawings.
   2. Motors 1/2 HP and above: 208V, three phase, 60 cycle; provide 3 phase combination magnetic starters.
   3. Do not provide starters if indicated as part of Division 15 work.
   4. Motors below 1/2 HP: 115V, single phase, 60 cycle; provide manual thermal element units.

2.2 ENCLOSURES

A. General:
   1. Service voltage: 208 V, 3 phase, 60 cycle.
   2. Branch circuit short circuit protection: Fused switch.
      a. Operating handle shall clearly indicate whether switch is on or off.
      b. Provide means to lock each operating handle in off position with cover closed by means of one to three padlocks.
      c. Interlock so that operating handle must be in off position before door can be opened.
   3. Finish: Thoroughly clean structure inside and out after fabrication and apply prime coat, and two coats of light gray (ANSI Color 61) or medium light gray (ANSI Color 49) enamel, inside and out.

B. Combination controller/disconnect: NEMA standard construction, Type A wiring in NEMA 1 general purpose enclosure.

1. Combination motor controller with fusible switch.
2. Cutler Hammer/Westinghouse Class A204 with fusible switch.

C. Separately mounted controller: NEMA standard construction, Type A wiring in NEMA 1 general purpose enclosure.
   1. Provide safety switch ahead of motor control, of size and as indicated, or required by NEC.
   2. Cutler Hammer/Westinghouse Class A200.

2.3 AUTOMATIC CONTROLLERS

A. General:
   1. Provide with three overload relays for complete single-phasing and overload protection.
   2. Provide START-STOP push button station or selector switch and red pilot light, or pilot light only, for each motor starter on cover of each unit where indicated on drawings or schedules.
   3. Provide with two extra NO interlocking contacts in addition to seal-in contacts.
   4. Provide 120 volt control circuit with one fuse.
   5. Overload relays: Bimetallic type.

B. Combination full voltage non-reversing starters:
   1. External manual reset thermal overload relays.
   2. Cutler Hammer/Westinghouse class A-204 with fusible switch.

C. Separately-mounted motor control stations: Heavy-duty type, push button and selector switch with NEMA 1 enclosure.
   1. Flush-mounted only as indicated.
   2. Provide control wire in conduit between control station and starter.
   3. Allen-Bradley Bulletin 800.

2.4 MANUAL CONTROLLER

A. Manual thermal element units: 120/240 volt, single phase, maximum 1 HP, with overload protection and toggle switch.
   1. Provide means for padlocking in off position.
   2. Cutler Hammer/Westinghouse Type MS.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated and in accordance with manufacturer's recommendations and instructions.

B. Provide fuses in fusible devices as indicated.

C. Provide heater elements which match characteristics of motor installed.

3.2 LABELING

A. Provide labeling as specified in Section 16010.

END OF SECTION